

WHAT IS CLAIMED IS:

1. A method of obtaining planarity measurements in a probe card analysis system; said method comprising:
 - 5 computing planarity effects due to fiducial plate deflection;
 - combining planarity effects due to probe card deflection and due to probe card fixture deflection; and
 - responsive to said computing and said combining, calculating a load compensated planarity for said probe card.
- 10 2. The method of claim 1 further comprising accounting for planarity effects due to stage deflection and wherein said calculating is further responsive to said accounting.
3. The of claim 2, wherein said accounting comprises utilizing a distance sensor proximate to said stage deflection.
- 15 4. The method of claim 1 wherein said computing comprises utilizing an optical metrology technique.
5. The method of claim 4 wherein said utilizing an optical metrology technique comprises:
 - 20 acquiring image data of a fiducial on said fiducial plate;
 - responsive to said acquiring, identifying deflection data values representative of a deflection of said fiducial plate; and
 - responsive to said identifying, providing correction data values enabling a first order correction of said deflection.
- 25 6. The method of claim 5 wherein said utilizing an optical metrology technique further comprises:
 - further identifying rate data values representative of a rate of deflection of said fiducial plate; and
 - 30 responsive to said further identifying, providing additional correction data values enabling a second order correction of said deflection.
7. The method of claim 1 wherein said combining comprises:

obtaining measurements of optical planarity and electrical planarity for said probe card;
measuring fiducial plate deflection at first electrical contact; and
responsive to said obtaining and said measuring, computing a combined deflection value for said probe card and said probe card fixture.

8. A method of obtaining a combined deflection measurement for deflections of a probe card and a probe card fixture; said method comprising:

obtaining measurements of optical planarity and measurements of electrical planarity for all non-bussed probes;
identifying fiducial plate deflection at first electrical contact at all non-bussed probe locations; and
responsive to said obtaining and said identifying, computing a combined deflection attributable to deflection of said probe card and deflection of said probe card fixture.

9. The method of claim 8 further comprising acquiring stage deflection measurements at proximal sensor locations and wherein said computing is further responsive to said acquiring.

10. The method of claim 9 wherein said stage deflection measurements are assumed to be zero.

11. The method of claim 8 wherein said identifying fiducial plate deflection comprises:
selectively positioning an imaging apparatus to acquire optical data at a selected non-bussed probe location;
acquiring said optical data when a non-bussed probe makes contact with said fiducial plate at said selected non-bussed probe location; and
responsive to said acquiring, measuring said fiducial plate deflection at said selected non-bussed probe location.

12. The method of claim 11 wherein said identifying fiducial plate deflection further comprises selectively repeating said selectively positioning, said acquiring, and said measuring for a different selected non-bussed probe location.

13. The method of claim 8 wherein said identifying fiducial plate deflection comprises computing said fiducial plate deflection as a function of full overtravel plate deflection at a particular probe location and of optical planarity.

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14. The method of claim 13 wherein said computing comprises utilizing a two dimensional interpolation calculation.

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15. A computer readable medium encoded with data and instructions for obtaining planarity measurements with respect to a probe card analysis system; said data and said instructions causing an apparatus executing said instructions to:

- compute planarity effects due to fiducial plate deflection;
- combine planarity effects due to probe card deflection and due to probe card fixture deflection; and

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- calculate a load compensated planarity for said probe card.

16. The computer readable medium of claim 15 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to account for planarity effects due to stage deflection.

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17. The computer readable medium of claim 15 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to compute said planarity effects due to fiducial plate deflection utilizing an optical metrology data processing technique.

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18. The computer readable medium of claim 17 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to execute said optical metrology data processing technique by:

- acquiring image data of a fiducial on said fiducial plate;
- responsive to said acquiring, identifying deflection data values representative of a deflection of said fiducial plate; and
- responsive to said identifying, providing correction data values enabling a first order correction of said deflection.

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19. The computer readable medium of claim 18 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to execute said optical metrology data processing technique by:

- 5 further identifying rate data values representative of a rate of deflection of said fiducial plate; and
 responsive to said further identifying, providing additional correction data values enabling a second order correction of said deflection.